Topic 2
[week 3]

Analysis of Data According to Various Cost Classifications and the Effect of Volume on Costs

Learning Outcomes

Upon completion of this topic, the students should be able to:

- **Describe the major assumptions behind the CVP analysis that must be stated**
- **Calculate contribution per unit, total contribution, and the the required sales for a given profit**
- **Solve simple breakeven calculations using the mathematical and graphical approaches**

Breakeven Analysis

This is the term given to the study of the interrelationships between costs, volume, and profit at various levels of activity. The term breakeven analysis is the one commonly used, but it is somewhat misleading as it implies that the only concern is with that level of activity which produces neither profit nor loss [breakeven point], whereby the behaviour of costs and profits at other levels is usually of much greater significance. Due to this, the cost-volume-profit [CVP] analysis is frequently used and is more descriptive.

Uses of CVP Analysis

CVP analysis explores the relationship which exists between costs, revenue, output levels and the resulting profit, and is more relevant where the proposed changes in the levels of activity are relatively small. In these cases, the established cost patterns are likely to continue, so CVP analysis may be useful for decision making. However, over greater changes of activity and in the longer term existing cost structures, the amount of fixed costs and marginal cost per unit are likely to change, the CVP analysis becomes less appropriate.

Short-run Decisions

Typical short-run decisions where CVP analysis can be useful are:

- **Choice of sales mix**
- **Pricing policies**
- **Multi-shift working**
- **Special order acceptance**

Assumptions Behind CVP Analysis

The major assumptions behind CVP analysis are:

- **All costs can be resolved into Fixed and Variable elements**
- **Fixed costs will remain constant and Variable costs vary proportionately with activity**
- **Over the activity range being considered, costs and revenues behave in a linear fashion**
- **The only factors affecting costs and revenue is volume**
- **The technology, production methods, and efficiency remain unchanged**
- **There are no stock level changes or that stocks are valued at marginal cost only**

CVP Formulae

- **B.E point in units = F. costs / Unit cont.**
- **B.E point in dollars = F. costs / C/S ratio**
- **C/S ratio = Unit cont. / Sales price per unit**
- **Sales level to achieved T.P = F. cost + Target profit / Unit cont.**

Graphical Method of CVP Analysis

This may be preferred where:

- **A simple overview is sufficient**
- **There is a need to avoid a detailed, numerical approach when, for example, the recipients of the information have no accounting background**

Traditional Breakeven Chart

- **Draw the axes:**

  Horizontal showing the level of activity and vertical showing the values for costs and revenues

- **Draw the cost lines:**

  Fixed cost line will be a straight line parallel to the horizontal axis at the level of the fixed cost. Total cost line will start from where the fixed cost line intersects the vertical axis and will be a straight line sloping upward at an angle depending on the proportion of variable cost in total costs.

- **Draw the revenue line:**

  This will be the line from the point of origin sloping upwards at an angle determined by the selling price.

The Contribution Breakeven Chart

This chart uses the same axes and data as in the traditional breakeven chart. The only difference is that Variable costs are drawn on the chart before Fixed costs resulting in the contribution being shown as a wedge.